

tain impressions which act on some central organ of co-ordination, is shown by the fact that section of the auditory nerve within the skull, causes marked disturbances of equilibrium," as shown by Brown-Séquard. The author adopts Dr. Crum Brown's description of the labyrinthine mechanism of co-ordination, consisting chiefly of the semicircular canals, the nerves distributed to the membranous ampullæ of which, take cognizance of changes in pressure, etc., occurring within them, and transmitting the impressions to the cerebellum, or at any rate, to the co-ordinating centers. But we must postpone further remarks until the next number of the JOURNAL, in which we will endeavor, not only to give a full summary of the experiments and views of Dr. Ferrier, but also a critical judgment as to their value.

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### III.—DISEASES OF THE NERVOUS SYSTEM.

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HANDBUCH DES KRANKHEITEN DES NERVENSYSTEMS, XI. ERSTE HÄLFTE; von Prof. H. Nothnagel, in Jena; Prof. F. Oberneier, in Bonn; Prof. O. Heubner, in Leipzig; Prof. G. Huguenin, in Zurich, and Prof. E. Hitzig, in Zurich. Mit 5 Holzschnitten. Leipzig, 1876. 819 pages. (*Hand-book of Diseases of the Nervous System.*)

In former numbers of the JOURNAL, we have taken occasion to notice the two parts composing the twelfth volume of Ziemsens' Hand-book, and which treat of the more general and peripheral disorders of the nervous system. The present volume which precedes them in the series, forming as it does the first portion of the eleventh volume, but which appears later in order of time, is devoted especially to affections that directly involve the brain and its membranes, the disorders of its circulation and nutrition, its inflammation and those of its membranes, with also the results of cerebral syphilis and tumors. The different articles or memoirs are by some of the most distinguished authorities on their respective subjects, as will be readily seen by reference to their names at the head of this article. Like those in the volumes previously noticed, they are, in the present state of our knowledge, almost exhaustive monographs of the disorders of which they treat, and by no means mere text-book handlings of their subjects. There are, it is true, many points that, in our opinion, are insufficiently discussed, and some that are, perhaps, omitted almost altogether; but these omissions or de-

fects do not materially depreciate the value of the work. We shall endeavor to point out these deficiencies as they appear to us. The excellencies of the several memoirs are for the most part sufficiently obvious, and an honest statement of their merits necessitates an exposal of both.

The first one hundred and ninety-two pages of the book are occupied with an account of the various circulatory disorders of the brain, by Prof. Nothnagel, of Jena, formerly of Breslau, whose well known investigations as to the cerebral functions have been frequently noticed in the pages of the JOURNAL. After a short preliminary chapter, in which he discusses the general conditions of the circulation within the cranial cavity, the influences which affect it, and its regulation, the author passes to the subjects of cerebral anæmia and hyperæmia which are treated in two successive chapters. A few points in these chapters are worthy of special notice as relating to questions still somewhat in dispute and giving the author's views in regard to them, or as giving new views, or such as are in other respects notable, considering the source whence they come.

Among the causes of cerebral anæmia, Dr. Nothnagel recognizes local vasal spasm causing a partial circumscribed deprivation of blood, but he does not go at any length into the subject, and merely alludes to it as being the pathological basis of certain forms of hemicrania and of *petit mal*. Vaso-motor paralysis, producing local congestion, is more fully alluded to in the remarks on cerebral hyperæmia, and the author favors the view that it may occur, though he holds that the absolute proof is still lacking to confirm it. Still the question as to the possibility of disorders of the circulation occurring in this or that limited portion of the brain receives comparatively slight attention at his hands, altogether less, it seems to us, than the subject deserves. A large number of clinical facts can hardly be well accounted for on any other supposition; though positive proof is lacking, and may perhaps be impossible to obtain, the inferential evidence is certainly very strong. We have in former numbers of the JOURNAL given our own views at considerable length, and it is not necessary to reiterate them. We notice the point here because there appears to us to be a lack of completeness in the author's account of the conditions of cerebral anæmia and hyperæmia, with so little mention of what must be comparatively frequent pathological conditions. Allowing them to be such—and it is hard to account for very many clinically observed facts without doing so—the practical importance of their recognition is evident, especially as regards diagnosis and prognosis. What might be, and indeed often is, taken for a symptom of serious and perhaps mortal injury of the brain, by its transitory nature and complete disappearance, not unfrequently gives us scarcely any choice but to consider it as due to a vaso-motor disorder of a very limited portion of its substance.

In his analysis of the sensory symptoms observed in cerebral

anæmia, Dr. Nothnagel alludes to the question as to whether the impairment of the senses of hearing and sight, is due to involvement of their special apparatus, or to imperfection of the psychic perceptive ability. He mentions a well known case of Abercrombie, that of the man whose hearing was impaired while in the upright position only, and was recovered on his assuming the recumbent or even stooping posture, as affording some support to the view that the acoustic was involved. It hardly appears to us to have any very decided bearing that way, since the general functions of the brain, psychic as well as sensory, are liable to be deranged more or less in its anæmic condition. In fact we see no reason for supposing the sensory symptoms to have any necessary connection whatever with the peripheral apparatus. The presumption is fully as much the other way. This view is supported, moreover, by the evidence offered by the author in regard to the ocular symptoms observed. He says that while he does not venture to say whether the optic nerve or the central perception is alone implicated, he has had oral evidence from a former colleague, Prof. Manz, that repeated ophthalmoscopic examinations in chlorotic and anæmic cases have revealed only slight pallor of the background of the eye, and no decided alterations of the caliber of the vessels, such as might be expected were the derangement of function dependent upon the implication of the ocular apparatus.

As regards the pathological signification of the symptoms observed, Dr. Nothnagel rather favors to some extent, the theory that they are due in part at least to variations of intracranial pressure. He says, speaking of this view, "If this opinion is perhaps too one sided, still the almost complete neglect of this cause at the present time is also plainly incorrect. That the intracranial pressure may diminish is an established fact, and if this takes place suddenly, so that interference with the functions of the brain may occur, this hypothesis is throughout supported. Unfortunately we have not as yet been enabled to test this question experimentally."

There are many clinical facts that seem to us hard to be accounted for by any of the other theories that have been proposed, such as a lack of a sufficient quantity of nutritive blood, or a change in its quality. Such, for example, are the suddenness with symptoms presumably due to cerebral anæmia, and directly following its rational causes. The peculiarities of the cerebral circulation are such as to readily justify the supposition that a much slighter variation of pressure of the brain substance than is perhaps supposed, may be followed by very marked phenomena, and when this is general, as there is a possibility it is in some forms of syncope, or complete though partial as in embolism, the symptoms are at once striking and sudden.

The researches that have been made in regard to the various centres in the medulla and pons, those for respiration and convulsion, are mentioned as affording us a better explanation of

the action of the other causes of the phenomena of anaemia. We know to some extent the effects of deficient or depraved blood supply on the respiratory centres. It is not difficult or irrational to suppose, as the author says, that, although the reaction of other parts of the brain may be somewhat different from that of this centre, yet there can be no doubt that the actual physical and chemical processes that occur within the ganglion cells must be the same in all.

Variations of intra-cerebral pressure are also the explanation for the depression phenomena observed in cerebral hyperæmia, in the opinion of our author, while the psychic exaltation is to be attributed to the superior amount of nutritive material furnished the cerebral cortex. The convulsive symptoms that are observed in this disease, he thinks, are partly properly to be considered as really epileptic, but he refers the reader for the discussion of the differential diagnosis of epileptic convulsions, and those due to congestion of the brain, to the article on epilepsy, already mentioned in this JOURNAL (Oct. 1876).

We have noticed only a comparatively few points in the two sections on cerebral anaemia and hyperæmia. There are many others equally worthy of mention, but they do not, perhaps, indicate so much the author's peculiar views or call for adverse or favorable comment. The subjects are throughout very judiciously and ably treated. The remarks on the therapeutic management of these conditions are brief, perhaps too much so, and are for the most part confined to general measures, special remedies being very little alluded to. Thus in the remarks on treatment of cerebral hyperæmia, no mention whatever is made of the drugs supposed to regulate the circulation, such as the bromides, nor in fact of any drugs whatever. The only medicinal substances specially mentioned for internal administration, are certain revulsive cathartics. It is probably, however, just as well to leave the details of treatment to the good judgment of the competent practitioner, after laying down the general principles that should guide his action, but we venture to predict that in this respect the book will somewhat disappoint the average American reader.

The important subject of cerebral hemorrhage is given a lengthy chapter of some ninety pages. After a short historical sketch of the opinions that have prevailed and the literature of the disorder, the author enters at once upon its *aetiology*. He first notices briefly and dismisses one or two erroneous ideas that have been advanced, that the hemorrhage is caused by a primary softening or a primary atrophy, and resolves the principal causal conditions into two, (1) increased vascular and particularly arterial pressure; (2) disease and consequent weakening of the coats of the vessels themselves. As to the relative value of the two causes, the latter is, with our present knowledge, declared to be altogether the most important factor in the production of the accident of cerebral hemorrhage. Among the

facts that lead to this conclusion, which the author here discusses in detail, are mentioned the miliary aneurysms of Charcot and Bouchard, that had previously been observed by Cruveilhier and Virchow, and which, according to the first-named authors, depend upon a chronic inflammatory process of the envelopes of the vessel. The atheromatous degenerations of the arteries are a less common cause of aneurysm leading to cerebral hemorrhage, and when they have this effect, it is generally in the larger arteries of the brain, and usually in the form of a meningeal rather than an intra-cerebral rupture. As regards the question whether simple atheromatous processes with their results of destruction of the elasticity of the arterial walls has any direct connection with cerebral hemorrhage, Dr. Nothnagel expresses some doubt. In an indirect manner and in connection with other causes producing weakness of the smaller vessels, like for example the above mentioned miliary aneurysms, the effect of this condition of rigidity of the coats of the larger vessels increasing the pressure in the already impaired terminal branches, its influence is still worthy of consideration.

Simple arterial blood pressure without previous alterations in the vessels, the author holds, is not to be included among the causes of cerebral hemorrhage, or if included, it must be as a very exceptional one. But with these previous alterations it becomes a very important factor in bringing about the rupture of the vessels. Venous congestion, under similar conditions may have a like result, but simple increase of tension in the veins, Dr. Nothnagel, thinks can no more lead to rupture than can that in the arteries. In support of this view, he mentions the cyanosis in the paroxysms of whooping cough and sometimes observed in child-birth, during which conditions apoplectic attacks are among the very rarest of accidents.

The above are the two principal ætiological conditions of cerebral hemorrhage; there are others, perhaps, such as altered qualities of the blood, that have an influence in certain rare and exceptional cases, but we need not dwell on them here. The author passes next to the predisposing causes, among which he considers advanced age to be the principal one. The so-called apoplectic habit of body which favors congestion, he thinks, has but little influence predisposing to cerebral hemorrhage. In his remarks on the anatomical relations of cerebral hemorrhage, he accounts for the well-known greater frequency of the lesion in the corpora striata than elsewhere, by the more direct blood pressure exercised on these parts than on others, they being irrigated, according to the statements of Heubner and Duret by the first branches of the anterior and middle cerebral arteries, in which vessels the impulse of the current from the carotid is most direct. Allowing then that the diseased conditions favoring hemorrhage are equally liable to occur in these vessels, it is not difficult to account for the greater frequency of hemorrhages in these parts.

The distinction that has been made of the so-called capillary apoplexy, from ordinary cerebral hemorrhage, the author holds to be unnecessary, inasmuch as it is in his opinion, either a secondary or subordinate phenomenon, or, if independently occurring, of very slight and transient importance. Minute extravasations into the brain substance are probably very quickly absorbed; he has never been able to find the slight hemorrhagic traces caused by a small needle inserted into the brain, two weeks after the operation.

The symptomatology is given with very much fullness, but it is impossible for us to follow the author in all his detail. A few points will, however, command our attention. Dr. Nothnagel in discussing the cause of the loss of consciousness in cerebral apoplexy and reviewing the theories that have been proposed, comes to the conclusion that all the explanations are as yet less satisfactory than perhaps is generally supposed. His disposal of the question is altogether non-committal. It appears to us that an expression of a provisional opinion as to the cause of the coma might, at least, have been justified by the facts and probabilities of the case. Too little account is made of the effect of the suddenness of lesions, which has been pointed out by Hughlings Jackson and Jaccoud and the effects of shock, which it seems to us may be as great from a small lesion in an important part of the brain, like the centres in the basal ganglia, as from a larger one in other portions less directly in relation with the principal bodily functions and routes of conduction, and less directly connected with all other portions. While it is eminently safe therefore to leave the subject as our author leaves it, this caution yet appears almost uncalled for. The fact that sudden hemorrhages may occur without producing loss of consciousness, is not by any means a proof that it is not generally so brought about, nor is the failure of artificial lesion in the lower animals to produce this, at all fatal to the supposition that it thus occurs from injuries of the much more responsive and sensitive human brain.

In regard to the question of direct hemiplegia, or that in which the intra-cerebral lesion and the paralysis are both on the same side, Dr. Nothnagel is equally non-committal. He admits the existence of such cases, and that they are very difficult to account for. He rejects also the hypothesis of a non-decussation of the fibres in the pyramids and that of their re-crossing proposed by Schiff, as untenable, being thus far unsupported by any anatomical evidence. The opinion of Ambrosi, adopted also, we believe, by Rosenthal, that hemiplegia is due to a secondary œdema affecting the opposite side of the brain, is objected to, on the ground that the direct effects of the obvious lesion have to be considered as non-existent, a point to which there is really considerable force. Dr. Nothnagel seems inclined to admit that the cases published of direct hemiplegia were correctly observed and reported, and allowing this much, his course is the safe one.

But the real objection to these cases and the one to which he does not at all allude, is the doubt as to the completeness and correctness of the observation. Hardly a case of brain lesion or disease that has ever been reported gives evidence of absolutely exhaustive examination, and is not liable to criticism on this ground, that would be valid against its acceptance as overthrowing any established views supported by the great mass of evidence. Cases of seemingly direct hemiplegia are too infrequent to be anything but rare exceptions to the general rule, and the probabilities of oversights in the observation of such reported cases are so great as to make it almost needless, it seems to us, to call in any other hypothesis to account for them.

Dr. Nothnagel himself alludes to the usual imperfection of the recorded observations, when discussing a little farther on, the question of the localization from the clinical phenomena of the lesion. He says, "If we examine the literature, it unfortunately reveals the fact that only a relatively few of the recorded observations meet the requirements, and that in many of these few, the clinical phenomena are very imperfectly reported, often only because the observations were made for special purposes." While this is true as regards the question of the more minute and special localization, it is none the less so for the more general localization of the trouble in one or the other cerebral hemisphere, and a consideration of this fact ought to have prevented the author from going so far as to favor, even vaguely and generally, the possibility of a direct hemiplegia, without involvement of the opposite hemisphere or some special arrangement in the decussation of the fibres, which, as stated above he rejects as improbable and unsupported. We know from both clinical and experimental evidence that the sensory fibres decussate in the cord, and that reflex movements occur on the same side of the body on which the impulse was given, even when they involve centres, probably above the sensory decussation. Moreover, the disorders of sensibility in hemiplegia are commonly co-extensive with the paralysis. Hence the necessity of assuming that there is also a crossing of the motor fibres. In a case of so-called direct hemiplegia, therefore, it is necessary for us to suppose the lesion to be indirect for the sensory symptoms and direct for the paralysis, or else to assume the existence of some very complex, and, anatomically and physiologically undemonstrable system of special commissural connections, which is absurd. Every physiological oirap bly as well as the great mass of clinical evidence is against it.

The symptomatology of the specially localized lesions in this or that portion of the brain, is pretty fully discussed, but with the same cautious and conservative spirit that is evidenced elsewhere in the author's work. His general conclusions are summed up in the following words : "Summing together what we have in only a briefly sketched manner stated, in regard to the possibility of a localization of the hemorrhagic infarctions, it

follows that we can diagnosticate with approximate certainty, the coincidence of certain determinate conditions being presupposed, hemorrhages only in the following localities : (1) in the pons, (2) in the cerebral peduncle, (3) in the nucleus lenticularis, (4) in the crura cerebelli, (5) the disease of a certain definite region, more fully described elsewhere, by the presence or predominance of a peculiar anaesthesia. And if the presence of a lesion in these localities even, can only be diagnosed with approximate certainty, in all other parts, after careful weighing of all possibilities, only more or less well-grounded probability can be stated, and even this often is lacking, especially when the lesion is extensive."

The special locality alluded to in the above quotation includes the posterior portion of the inner capsule, and possibly some of the adjoining parts. M. Charcot refers the anaesthesia to lesions of the posterior one-third of the inner capsule, the anterior two-thirds producing motor paralysis.

Dr. Nothnagel recognizes no established difference between the two sides of the brain as regards their functions, except in respect to the function of speech which is referred to elsewhere, nor does he consider the opinion held by some that lesions of the occipital lobes are especially connected with intellectual disturbances as at all supported.

It is possible, perhaps, that some modification of this statement might be made at the present time, considering the advances that have been made within the past two or three years in the department of cerebral physiology. The author himself says in a note at the close of his chapter on embolism and thrombosis following the one under consideration, that he has not made use of these later researches, since he finished his manuscript in November, 1874. We are very far from certain that he is not too conservative in the views he here expresses, and that the approximate diagnosis of lesions in several other locations may not be made during life.

The remarks on treatment are as usual, general in their character, and with the exception of the iodide of potash and a general condemnation of the use of strychnia drugs are scarcely mentioned. The author's reliance is on other measures, venesection, counter-irritation, electricity and warm baths. As in the case of the remarks on the treatment of cerebral hyperæmia, we venture to predict that his treatment in hemorrhage will not altogether coincide with the ideas of the American practitioner.

The remarks on meningeal hemorrhage present no particular features to call for attention here. The same is the case to a considerable extent with the following chapter on embolism and thrombosis, which, though of considerable length, may be passed by here, one or two points only being noted. The question as to the cause of the coma in cases of embolism is taken up and disposed of in much the same way as in the case of the coma following cerebral hemorrhage. Our remarks when dis-

cussing that point will also apply here. As to the convulsions that sometimes occur, their explanation is possible, when large tracts are deprived of their blood-supply as in the case of the occlusion of the basilar, by the diffuse anæmia of the pons and medulla. In case of embolisms of smaller arteries, he can only account for them by calling into consideration the results of the well-known experimental researches on the cortical substance in which convulsions were excited by electrical or mechanical irritation, the sudden anæmia caused by the embolism, in this case acting as the excitant.

The section on tumors of the brain by Dr. Oberneier appears to be a useful and quite complete and well-arranged memoir upon its special subject, but for various reasons chiefly on account of the relatively slight frequency of these affections and the necessary limits of this notice, we cannot here give it detailed attention. The section next following that of Dr. Heubner on syphilitic disease of the brain, cord and nerves we shall pass, as we have already noticed in the pages of the JOURNAL (April, 1875,) a more extensive work on part of the same subjects, and the article though important is very concise and presents no important points for criticism. We can cordially recommend it to our readers as a brief but thorough handling of this very important subject by a thoroughly competent authority.

[TO BE CONTINUED.]

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#### IV.—BARTHOLOW : THERAPEUTICS.

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A PRACTICAL TREATISE ON MATERIA MEDICA AND THERAPEUTICS. By Roberts Bartholow, M. A., M. D. New York : D. Appleton & Co. 1876; 537 pages. Chicago: Jansen, McClurg & Co.

In the multiplication of works on all the practical and general departments of medicine at the present day, each new comer is liable to be closely questioned as to its *raison d'etre* and must furnish valid reasons for its appearance. And though it is far from being true in all cases that success depends upon merit, yet any work that is more than a mere epitome or labor-saving condensation, must to meet the favor of the book-buying and reading public present some well-grounded claims for consideration. This is especially the case with a work like the one whose title heads this notice, and which appears so soon after another work of unusual merit, that of Dr. H. C. Wood, occupying the same department of medicine.